

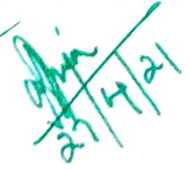


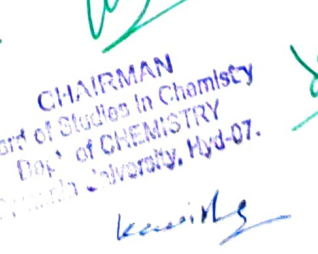
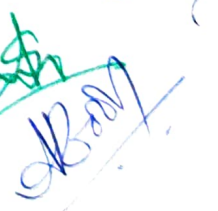






CBCS - B.Sc. FOOD SCIENCE OPTIONAL SUBJECT - 2021-22 (THEORY) (8 paper structure)

Semester -I	Semester-II	Semester -III	Semester -IV	Semester-V	Semester -VI
PAPER-I Basics of Food and Nutrition Marks-80+20	PAPER-II Food Science and Chemistry Marks-80+20	PAPER-III Food Preservation and Packaging Marks-80+20	PAPER-IV Food Microbiology, Safety and Quality Marks-80+20	PAPER-501 (GE) Food Product Development Marks-80+20	Project Training Or
1. Introduction to food and Nutrition 2. Energy, Carbo hydrates, Proteins, fats & oils, role of fibre 3. Foods of Plant origin 4. Foods of animal origin	1. Post-Harvest Technology 2. Extrusion Technology 3. Definition and importance of Food Chemistry 4. Protein Chemistry	1. Scope and importance of food processing, principles of food preservation 2. Low temperature, Thermal processing Preservation by sugar and salt, Chemical preservation 3. Definition, Functions of packaging, packaging of different foods 4. Development of suitable packaging for food, Packaging laws, Regulations and food labelling.	1. Introduction to Food Microbiology, Growth curve 2. Food spoilage, Beneficial effects of Micro Organisms 3. Common terms associated with Food safety, Food safety and Hygiene in tropics 4. Assessment of microbiological quality of foods	1. Designing new products from a market perspective 2. Organoleptic evaluation and considerations for sensory evaluation 3. Finding place for new foods in regular markets, advertising and sales promotion, storage; types of transport; insurance 4. Food Processing Industry and consumer research	PAPER-601 Entrepreneurship and Management Marks-80+20 1. Entrepreneurial Science, introduction, business opportunity identification Setting up a business unit 2. Meaning and definition of Management, Organization 3. Basics of financial, cost accounting and marketing management 4. Investment & Financing a project, Govt. schemes for Financial assistance
		Sec I ; Snack Food Technology-2 credits Sec II; Beverage Technology-2 credits	Sec III ; Bakery Technology-2 credits Sec IV; Confectionary Technology-2 credits	PAPER-504 A Testing and Analysis Of Foods; marks-80+20 1. Food Adulteration, Standardization of Foods 2. Physical and chemical properties of foods 3. Determination of moisture content, Carbohydrate Analysis and Fat Analysis 4. Analysis of proteins, Vitamins and minerals, Kinetic Methods in Food Analysis	PAPER-604 A - Instrumental Methods of Food Analysis Marks-80+20 1. Introduction to food Analysis, Sampling 2. Colorimetry & Spectrophotometry, Instrumentation, minerals, Florimetry 3. Chromatography, Electrophoresis 4. Atomic Absorption spectrometer, Flame Emission Spectroscopy, Radiotracer techniques.
		Sec I Unit I - Grain based snacks Unit II - Vegetable and fruit based snacks	Sec III Unit I - Dough characteristics Unit II - Manufacturing process of products	B. Retail Food Vending	B Novel Food Technologies


 CHAIRMAN
 Board of Studies in Chemistry
 Dept. of CHEMISTRY
 University, Hyd-07.

CBCS - B.Sc. FOOD SCIENCE OPTIONAL SUBJECT - 2020-21 (PRACTICAL)

Semester-I	Semester-II	Semester-III	Semester-IV	Semester-V	Semester-VI
PAPER-I Food Science marks-40+10	PAPER-II Science And Chemistry of Foods Marks- 40+10	PAPER-III Food Preservation and Packaging Marks-40+10	PAPER-IV Food Micro Biology - Marks-40+10	PAPER-V-A Testing and Analysis of Foods Marks- 40+10	PAPER-VI-A Instrumental Methods of Food Analysis Marks- 40+10
1. Food measuring techniques 2. House hold measures for raw and cooked foods 3. Calculation of BMI using height and weight 4. Best method of cooking for rice, dal, egg, etc., 5. Demonstration of the effect of sprouting 6. Analysis of physico chemical properties of cereals and products 7. Analysis of fruits and fruit products	1. Test for gluten 2. Experimentson starches 3. Experiments on sugars 4. Experiments on fruits and vegetables; pigments & pH 5. Experimentson Milk and milk products on properties of egg 6. Visit to FCI / warehouses / agro based food industries	1. Preparation of Jams, Jellies and Marmalades, 2. Squashes, Preserves and candies 3. Sauces and Ketchups 4. Preparation of Instant pickles and fermented pickles 5. Food package material – Scrap Book 6. Shelf life of packed products 7. Visit To Indian Institute Of Packaging / fruit and vegetable processing factories	1. Use of Microscope, 2. Tools of Micro biologist, 3. Study of Bacteria and yeast 4. Determination of Detergent Strength 5. Direct Microscopic count 6. Study of molds in foods 7. Determination of fill of the can, water holding capacity of containers 8. Estimation of Microbiology count based on Dye reduction tests 9. Identification of Micro Organisms involved in food spoilage 10. Beneficial Effects of Microorganisms 11. Planning a training programme	1. Analysis of Moisture content of different foods 2. Estimation of Ash for different food samples 3. Analysis of Sugar and Sugar related products, cereals and their products, Fat & oils, Milk & Milk products 4. Analysis of foods for the presence of common Additives 5. Synthetic Sweetening Agent - Saccharin Estimation of Common Additives	1. Colorimetry Estimation of Protein, amino acids, Inorganic Elements, Ascorbic Acid 2. Florimetry, 3. Flame Photometry 4. Chromatography - TLC 5. Kjeldhal method for proteins 6. Soxhelt method for fat
				Paper V-B Retail food vending	
					Paper VI B Novel food technologies

Handwritten signatures and dates are present at the bottom of the page. One signature includes the date 27/11/21. Other signatures are in various colors (blue, green, black) and some are crossed out with a line.

Telangana State Council of Higher Education, Govt. of Telangana
B.Sc., CBCS Common Core Syllabi for all Universities in Telangana
PROPOSED SCHEME FOR CHOICE BASED CREDIT SYSTEM
IN B.Sc. FOOD SCIENCE from 2021-22 onwards

FIRST YEAR - SEM - I				
CODE	COURSE TITLE	COURSE TYPE	HPW	credits
BS101	Ability Enhancement Compulsory Course AECC-1	ES	2	2
BS102	English	CC-1A	4	4
BS103	Second Language	CC-2A	4	4
BS104	Optional-I - Food Science-I Laboratory Course-I	DSC-1A	4T + } = 7 3P	4+1=5
BS105	Optional-II	DSC-2A	4T+3P=7	5
BS106	Optional-III	DSC-3B	4T+3P=7	5
TOTAL CREDITS			31	25
FIRST YEAR - SEM - II				
BS201	Ability Enhancement Compulsory Course AECC-1	ES	2	2
BS202	English	CC-1B	4	4
BS203	Second Language	CC-2B	4	4
BS204	Optional-I - Food Science -II Laboratory Course-II	DSC-1B	4T + } = 7 3P	4+1=5
BS205	Optional-II	DSC-2B	4T+3P=7	5
BS206	Optional-III	DSC-3B	4T+3P=7	5
TOTAL CREDITS			31	25
SECOND YEAR - SEM - III				
BS301	Snack food technology Beverage technology	SEC-I SEC-II	2 2	2 2
BS302	English	CC-1C	3	3
BS303	Second Language	CC-2C	3	3
BS304	Optional-I - Food Science -III Laboratory Course-III	DSC-1C	4T + } = 7 3P	4+1=5
BS305	Optional-II	DSC-2C	4T+3P=7	5
BS306	Optional-III	DSC-3C	4T+3P=7	5
TOTAL CREDITS			31	25
SECOND YEAR - SEM - IV				
BS401	Bakery technology Confectionary technology	SEC-III SEC-IV	2 2	2 2
BS402	English	CC-1D	3	3
BS403	Second Language	CC-2D	3	3
BS404	Optional-I-Food Science-IV Laboratory Course-IV	DSC-1D	4T + } = 7 3P	4+1=5

27/4/21
 Dr. M. S. RADHIKA, PhD (Nutrition)
 Head of the Department
 Department of Dietetics, ICMR-National Institute of Nutrition
 Jamia-Osmania (PO), Secunderabad 500 007, INDIA

B.Sc. food science - I, II & III Year, CBCS Syllabus

BS405	Optional-II	DSC-2D	4T+3P=7	5
BS406	Optional-III -	DSC-3D	4T+3P=7	5
TOTAL CREDITS			31	25
THIRD YEAR - SEM V				
BS 501	Food product development	GE	4	4
BS 502	English	CC-1E	3	3
BS 503	Second language	CC-2E	3	3
BS 504	Optional - I –food science –V A-testing and analysis of foods or B-retail food vending Laboratory course –V	DSE –IE	4 + } = 7 3	4+1=5
BS 505	Optional – II A/B	DSE -2E	4+3=7	4+1=5
BS 506	Optional- III A/B	DSE -3E	4+3=7	
TOTAL			31	25
THIRD YEAR- SEM VI				
BS 601	Project in Food science/entrepreneurship and management			4
BS 602	English	CC-1F	3	3
BS 603	Second language	CC-2F	3	3
BS 604	Optional -I A- instrumental methods of food analysis or B. Novel food technologies Laboratory course-VI	DSE-IF	4 + = 7 3	4+1=5
BS 605	Optional - II A/B	DSE -2F		4+1=5
BS 606	Optional – III A/B	DSE- 3F		
TOTAL			31	25
TOTAL CREDITS IN ALL SIX SEMESTERS				150

* AECC: Ability Enhancement Compulsory Course, SEC: Skill Enhancement Course, DSC: Discipline Specific Course, GE: Generic Elective, ES: Environmental Science, BCS : Basic computer skills.

* B. Sc. Food Science Optional Subject students undergo one month On-the-Job Training in food processing industries after the completion of the fourth semester during summer.

* An amount of Rs. 2000/- is collected as Project Fees.

* This work is assessed for 4 Credits and a Certificate is to be issued mentioning the Grade.

Sus
27/4/21

Shalga

[Signature]

[Signature]

[Signature]

M.S.R.

[Signature]

[Signature]

[Signature]

[Signature]

[Signature]

डॉ.एम.एस. राधिका, पीएचडी (पोषण)
Dr. M. S. RADHIKA, PhD (Nutrition)
 वैद्यकीय-ई (उप निदेशक) व विभागाध्यक्ष
 Science E & Head of the Department
 आहारविज्ञानविभाग, आईसीएमआर राष्ट्रीय पोषण संस्थान
 Department of Dietetics, ICMR-National Institute of Nutrition
 जमशेदपुर, पोस्ट: सिकंदराबाद-800 008, भारत
 Jamal-Osmania (P.O), Secunderabad-500 007, INDIA

**CBCS B Sc. FOOD SCIENCE OPTIONAL SUBJECT FOR THE BATCH ADMITTED IN -
2021-2022 , DEPT OF CHEMISTRY
SEM – II PAPER – II FS 201 (W) FOOD SCIENCE AND CHEMISTRY**

60 Hrs (4 Hrs/week)

AIM

CREDITS - 4 + 1

To teach about various aspects of Science and Chemistry of foods in theory and practicals .

Objectives:

To help the students to:

1. To know the basic processing
2. To study the physical and chemical changes in food during processing.
3. To learn about the Post Harvest Management of various foods.
4. To learn about the Advances in processing technology.

UNIT – I

1. Post Harvest Technology – concept, need and importance, statistics, general loss and recovery, role of post-harvest technologists, present status and future of post harvest technology.
2. Storage requirements, Storage structures. Types of storage. Organizations for storage – SGC, FCI, ware house
3. PHT of food grains, fruits and vegetables, plantation crops

UNIT – II

1. Extrusion technology – introduction, definition, classification of extruder systems; cold extruders, single screw extruders, twin screw extruders, selection of raw materials, basic principles, merit and demerits, different types of extruded foods; breakfast cereals, weaning foods, macaroni products, meat analogues, etc.,
2. High protein food technology – concept, types of high protein foods; leaf proteins, proteins from micro-organisms, proteins from algae (chlorella and spirulina) and microbial synthesis of proteins from hydrocarbons, governmental policies, factors affecting choice of consumer.
3. fortification and enrichment technology of foods, advantages, national and international fortification programs

UNIT III

Definition and importance of Food Chemistry;

1. General classification of foods (sols, gels, colloids, emulsions), physical and chemical properties of foods
2. Carbohydrate chemistry; Sugars, physical and chemical properties, uses in cookery, changes in carbohydrates during processing.
3. Types of starches; (Cereals, millets, Legumes, roots and tuber starches) structures. gelatinization and factors affecting it, retrogradation.

Handwritten signatures and dates in green ink at the bottom of the page, including names like 'Anil', 'Anurag', 'Pallavi', 'Kavitha', 'ABBY', and 'MIDN'.

UNIT - IV

1. Protein chemistry; nature and types of proteins, structures, physical and chemical properties of proteins, amino acids, changes in protein during processing.
2. Lipid chemistry; structures, physical and chemical properties, chemical changes in fatty acid during processing
3. Fruit and vegetable chemistry; Changes in pigments during processing

Reference Books:

1. Food facts and Principles – Shakuntala Manay, New Age International (P) Ltd, 2013.
2. Food Science – Srilakshmi, New Age International (P) Ltd., 2013.
3. Food Science – Potter, CBS Publishers, 1999.
4. Food Science & Quality Control by SMT. B. Poornima - Centrum Press First edition 2014.
5. Post Harvest Management of Horticultural crops - S. Saraswathy, T.L. Preethi AGROBIOS (India) 2013.
6. A Handbook of Agro Food processing and marketing by S.C. Gaur, Agro Bios (India) 2012.
7. Food processing and preservation – Subbulakshmi, G. Shobha, A. Udipi, New Age International (P) Ltd., 2006.
8. Food Technology processing and laboratory control – Ayland, Allied Scientific Publisher, 1999.
9. Post Harvest – RBH Mills Etal, A V I Publishing Co., 1981.
10. Food processing Waste Management – Green & Kremer, A VI Publishing Co., 1979.
11. Food science and food bio technology- Sheetal Singh.

NOTE FOR PAPER SETTING:

The Question paper will consist of two sections.

Section I: (8*4=32) Consist of 12 questions. Each question carries Equal weightage of marks. The candidate will have to attempt eight questions.

Section II: (4x12=48) Consist of 4 questions (1 from each unit with internal choice). Each question carries weightage of 12 marks. The candidate will have to attempt all questions.

Distribution of Internal Assessment (20 Marks)

20 marks for theory paper in a subject reserved for internal assessment shall be distributed as under:

- (i) Two Class Tests ; 15 marks each, (subjective and objective)
One Written Assignment
(ii) /group activity/mini project : 5marks

Handwritten signatures and dates:
27/4/21
Pallavi
Kavitha
M.S.R.
M.S.R.
M.S.R.

Dr. M.S. RADHIKA, PhD (Nutrition)
Science-E & head of the Department
आहारविज्ञानविभाग, आईसीएनआर-राष्ट्रीय पोषणसंस्थान
Department of Dietetics, ICMR-National Institute of Nutrition
जम्हाउस्मानिया (पोस्ट), सिकंदराबाद-५०००२९, आंध्र
Jamaal Osmanlia (PO), Secunderabad-500029, A.P.

CBCS B.Sc. FOOD SCIENCE OPTIONAL SUBJECT FOR THE BATCH ADMITTED IN -
2021-2022, DEPT OF CHEMISTRY

SEM- II PAPER – II FS 251 (W) SCIENCE AND CHEMISTRY OF FOODS

1. Experiments on Cereals;

- i. Test for gluten content of the flour.
- ii. Examination of Microscopic structure of food starches.
- iii. Test for gelatinization properties of food starches.
- iv. Effect of added substances on the gelatinization properties of starches.

2. Experiments on sugars

- i. Test for the effect of Temp on solubility of Sugar.
- ii. Test for the effect of Concentration of Sugar on boiling point.
- iii. Test for the effect of heat on Sugar solution corresponding to the thread and cold water tests.
- iv. Demonstration of fondant and Fudge.
- v. Demonstration of inversion, melting and caramelization.

3. Experiments on vegetables and fruits

- i. test for the effect of heat on Fruits & Vegetables.
- ii. Test for changes in pH during cooking of Fruits & Vegetables.

4. Experiments on milk

- i. Test for effect of heat on Milk.
- ii. Test for effect of heat and acid on proteins of Milk.
- iii. Test for effect of added substances in the preparation of Milk products.

5. Experiments on egg

- i. Test for effect of temperature on stability of a natural emulsion.
- ii. Determination of a method for preparation of stable emulsion like Mayonnaise.
- iii. Test for the effect of added substances on stability of egg white foam.

6. Visit to FCI / warehouses / agro based food industries

Note for internal assessment;

Practical Internal / Group
activity / mini project

: 10 marks (foodbarium)

[Handwritten signatures and dates in blue and green ink]

27/4/21

M.S.R.

Dr. M. S. RADHIKA, PhD (Nutrition)
Science E & Head of the Department
आहारविज्ञानविभाग, आइसीएनआर-राष्ट्रीयपोषणसंस्थान
Department of Dietetics, ICMR-National Institute of Nutrition
जम्शेदपुर (पोस्ट), सिकरबाट 833 008 भारत
Jamal Osmania (PO) Secunderabad 500 087, INDIA

UNIT-IV

1. Assessment of microbiological quality of foods; techniques used for analysis
HA CCP an approach to Food safety, **GAP**, GHP, TQM. International and National standards for food safety.
2. Naturally occurring toxins in foods,
3. Chemical toxins; Pesticides residues, Heavy metals, toxins from food contact materials, veterinary drug residues, Toxins of processing. Effect of toxins on Human beings. Microbial toxins; Bacterial and fungal; Testing the foods for toxins and chemical residues.

Reference Books;

1. Betty - c Hobbs & Diane Roberts – Food poisoning and food hygiene sixth edition by Arnold International Students edition – 1993.
2. Food Toxicology Vol. I & II – Conn
3. Modern Toxicology Vol. I, II & III – Chaplin P.K. & Salunkhe D.K.
4. Quality Control for the food Industry Vol. I & II – A. Krammer.
5. Quality Control in Food Industry Vol. I, II & III – S.M. Hetschedoerfer.
6. food Microbiology – Frazier, W.C., Ed-4, Mc. Graw Hill – 2013.
7. Microbiology by John Garbult Essentials of Food Microbiology - Arnold International Student edition 1997.
8. Betty - c Hobbs & Diane Roberts – Food poisoning and food hygiene sixth edition by Arnold International Students edition – 1993.
9. Practical Food Microbiology & Technology – Mountnety Gould, Ed-3, Krieger Publishing Company, 1992.
10. Modern Food Microbiology – Jay J.H. CBS Publishers, 1990.

NOTE FOR PAPER SETTING:

The Question paper will consist of two sections.

Section I: (8*4=32) Consist of 12 questions. Each question carries Equal weightage of marks. The candidate will have to attempt eight questions.

Section II: (4x12=48) Consist of 4 questions (1 from each unit with internal choice). Each question carries weightage of 12 marks. The candidate will have to attempt all questions.

Distribution of Internal Assessment (20 Marks)

20 marks for theory paper in a subject reserved for internal assessment shall be distributed as under:

- | | |
|--|---|
| (i) Two Class Tests | 15 marks each, (subjective and objective) |
| (ii) One Written Assignment /group activity/mini project | : 5marks |

Handwritten signatures and dates:
27/4/24
M.S.K.
M.S.K.
M.S.K.

डॉ. एम. एस. राधिका, पीएचडी (पोषण)
Dr. M.S. RADHIKA, PhD (Nutrition)
वैज्ञानिक-ई (उप निदेशक) व विभागाध्यक्ष
Science-E & Head of the Department
आहारविज्ञानविभाग, आईसीएनआर-राष्ट्रीय पोषण संस्थान
Department of Dietetics, ICMR-National Institute of Nutrition
जामि-उस्मानिया (पोस्ट), सिकंदराबाद-५०० ००२, आंध्र प्रदेश
Jamai-Osmania (PO), Secunderabad-500 002, ANDHRA PRADESH

B.Sc. food science II year Semester - IV
Skill Enhancement Course- III (SEC - III)
(2 Credits)

BAKERY TECHNOLOGY

UNIT I

15 h (1hr/week)

Bakery industry; raw materials and quality parameters; dough development; methods of dough mixing; dough chemistry; rheological testing of dough-Farinograph, Mixograph, Extensograph, Amylograph / Rapid Visco Analyzer, Falling number, Hosney's dough stickiness tester and interpretation of the data.

UNIT II

15 h (1hr/week)

Manufacturing process of cookies, crackers, biscuits, cakes (and its types), pizza, pastry, noodles, pasta, vermicelli, bread and the effect of variations in formulation and process parameters on the quality of the finished product; quality consideration and parameters; Staling and losses in baking; machineries used in bakery industry.

Recommended books;

1. Dubey SC. 2002. Basic Baking. The Society of Indian Bakers, New Delhi.
2. Francis FJ. 2000. Wiley Encyclopedia of Food Science & Technology. John Wiley & Sons.
3. Manley D. 2000. Technology of Biscuits, Crackers & Cookies. 2nd Ed. CRC Press.
4. Pyler EJ. Bakery Science & Technology. 3rd Ed. Vols. I, II. Sosland Publ.
5. Qarooni J. 1996. Flat Bread Technology. Chapman & Hall.

Course Objective (CO):

To develop the skills for processing of different types of bakery products with a brief knowledge of machinery











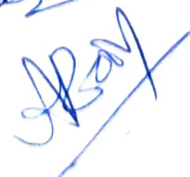










B.Sc. Food Science II year Semester - IV
Skill Enhancement Course- IV (SEC - IV)
(2 Credits)
CONFECTIONARY TECHNOLOGY

UNIT I

15 h (1hr/week)

Chocolate Processing Technology, Compound Coatings & Candy Bars, Tempering technology, Chocolate hollow figures, Chocolate shells, Enrobing technology, Manufacture of candy bars, Presentation and application of vegetable fats. Production of chocolate mass. Sugar Confectionery manufacture, General technical aspects of industrial sugar confectionery manufacture, Manufacture of high boiled sweets – Ingredients, Methods of manufacture–Types–Center–filled, lollipops, coextruded products. Manufacture of gums and jellies–Quality aspects.

UNIT II

15 h (1hr/week)

Quality characteristics of confectionery ingredients; technology for manufacture of flour, fruit, milk, sugar, chocolate, and special confectionary products; colour, flavour and texture of confectionary; standards and regulations; machineries used in confectionery industry. Manufacture of Miscellaneous Products, Caramel, Toffee fondant and fudge– Liquorices paste and aerated confectionery, Lozenges, sugar panning and Chewing gum, Count lines Quality aspects, fruit confections.

Recommended books;

1. Dubey SC. 2002. Basic Baking. The Society of Indian Bakers, New Delhi.
2. Francis FJ. 2000. Wiley Encyclopedia of Food Science & Technology. John Wiley & Sons.
3. Manley D. 2000. Technology of Biscuits, Crackers & Cookies. 2nd Ed. CRC Press.
4. Pyler EJ. Bakery Science & Technology. 3rd Ed. Vols. I, II. Sosland Publ.
5. Qarooni J. 1996. Flat Bread Technology. Chapman & Hall.

Course Objective (co):

To develop the skills for processing of different types of confectionery products

[Handwritten signatures and dates in green and blue ink]

डॉ. एम. एस. राधिका, पीएचडी (पोषण)
Dr. M. S. RADHIKA, PhD (Nutrition)
विभागिका-३ (अध. विदेशिका) व विकासप्रदाता
Science E & Food of the Department
आहारविज्ञानविभाग, आईसीएनआर-राष्ट्रीयपोषणसंस्थान
Department of Dietetics, ICMR-National Institute of Nutrition
जमशेदपुर (पोस्ट), झारखण्ड-८३१००६, भारत
Jamshedpur (PO), Jharkhand-831006, India

**CBCS B. Sc. FOOD SCIENCE OPTIONAL SUBJECT FOR THE BATCH ADMITTED
in -2020-2021 onwards, DEPT OF CHEMISTRY**

SEM – VI BS – 601 ENTREPRENEURSHIP AND MANAGEMENT

60 Hrs (4 Hrs/week)

AIM:

CREDITS 4

To orient students towards entrepreneurial development through practical exposure.

Objectives:

1. To help the students identify the ways of creating an enterprise
2. to help students to understand basic management practices

UNIT – I :-

1. Entrepreneurial Science; meaning and definitions, evolution of business. objectives and Functions of business enterprise, Characteristics of business undertaking, formation of a company, types of companies.
2. Setting up a business unit; plant layout, factors affecting layout choice, types of layout
3. Process charts, plant Location, factors affecting choice of location

UNIT-II

Basics of management and organization;

1. Meaning and definition of Management; Principles and Functions of Management - levels of Management.
2. Inventory Management
3. Definition and structure of organization, forms of structures, span of management delegation and decentralization.

UNIT-III -

Basics of financial, cost accounting and marketing management

1. Meaning and definitions of accounting, accounting concepts and conventions, journals, ledger trading, Profit and Loss Account-Balance Sheet.
2. Meaning and definitions of cost accounting, elements of cost, cost classification, cost sheet, '
3. Marketing management

UNIT VI

1. Investment & Financing a project,
2. Govt. schemes for Financial assistance i.e. subsidy / grants / loans for entrepreneurs / self employed.
3. Small scale Unit approach and planning.

Handwritten signatures and dates:
Sohal
27/4/21
Rajput

Handwritten signature and date:
Kavita
27/4/21

Handwritten signature:
Pallavi

Handwritten signature:
M.S.R.

Handwritten signature:
M.S.R.
डॉ.एम.एस. राधिका, पीएचडी (पोषण)
Dr. M.S. RADHIKA, PhD (Nutrition)
वैद्यकीय-ई (उप-निर्देशक) आहार विज्ञान विभाग
Science E & Head of the Department
आहारविज्ञानविभाग, आईसीएमआर राष्ट्रीय पोषण संस्थान
Department of Dietetics, ICMR-National Institute of Nutrition
जामो-उस्मानिया (पोस्ट), सिकंदराबाद-500 008, आंध्र
Jamar-Osmania (PO), Secunderabad-500 007, A.P.A.

References;

- Principles & Practice of Management/T.N. Chandra, Dhanpat Rai & Sons, New Dehi, 6th edition 2000.
- Finance Management, Theory & Practice-Prasanna Chandra.
- Modern Accounting-A Mukherjee and M.Haniff.
- Cost and Management Accounting: Prof. Prashanta Athma, Himalaya Publishing House.
- Financial Accounting: Prof. Prashanta Athma, Himalaya Publishing House.
- Financial Accounting-S.P. Jain and K.L. Narang, Kalyani Publications.
- Principles & Practice of management-L.M. Prasad, Sultan Chand Publications, New Delhi, 6th edition 2001.
- Cost and Management Account: Jain and Narang, Kalyani Publications.
- Cost and Management Accounting: MN Arora, Himalaya Publications

NOTE FOR PAPER SETTING:

The Question paper will consist of two sections.

Section I: (8*4=32) Consist of 12 questions. Each question carries Equal weightage of marks. The candidate will have to attempt eight questions.

Section II: (4x12=48) Consist of 4 questions (1 from each unit with internal choice). Each question carries weightage of 12 marks. The candidate will have to attempt all questions.

Distribution of Internal Assessment (20 Marks)

20 marks for theory paper in a subject reserved for internal assessment shall be distributed as under:

- Two Class Tests : 15 marks each, (subjective and objective)
- One Written Assignment /group activity/mini project : 5marks

[Handwritten signatures and dates in blue and green ink]

डॉ.एम.एस. राधिका, पीएचडी (पोषण)
Dr. M.S. RADHIKA, PhD (Nutrition)
वैज्ञानिक ई (उप निदेशक) & विभागाध्यक्ष
Science E & Head of the Department
आहारविज्ञानविभाग, आईसीएमआर-राष्ट्रीयपोषणसंस्थान
Department of Dietetics, ICMR-National Institute of Nutrition
जमशेदपुरमिनिया (पोस्ट), सिकंदरबाद-800 029 उड़ीसा भारत
Jamshedpur (PO), Secunderabad-500 029, S. India

CBCS B.Sc. FOOD SCIENCE OPTIONAL SUBJECT FOR THE BATCH ADMITTED
IN -2020-2021 onwards, DEPARTMENT OF CHEMISTRY
SEM VI DSE-1F(A)
INSTRUMENTAL METHODS OF FOOD ANALYSIS

60 Hrs (4 Hrs/week)

AIM

CREDITS – 4 + 1

To educate students in instrumental methods used for food analysis in industry

Objectives:

1. To teach about various analytical methods used for qualitative and quantitative parameters of foods
2. To educate about modern techniques used in investigating food quality and standardization.

UNIT -I

1. Introduction to food Analysis; Classification of Analytical Methods, Types of instrumental Methods, Selection of an Analytical Method, Calibration of Instrumental methods.
2. Food composition and Factors affecting food composition.
3. Sampling; Selection of Sampling procedures; Factors that affect choice of sampling plan, Risk in selection of a plan; Sampling procedures, Problems in Sampling, Preparation of samples.

UNIT II

1. Colorimetry: Beer Lambert law, Principle, Instrumentation;
2. Spectrophotometry; single beam and double beam spectrophotometry, application to analysis of Sugars, Amino acids, Minerals; Iron, Phosphorus and Ascorbic acid.
3. Fluorimetry: Principle & Instrumentation (Spectrofluorometer) Application in analysis of Thiamin & Riboflavin.

UNIT - III

1. Separation Techniques; classification of separation techniques.
2. Chromatography
 - i. TLC: Principle and applications to analysis of carbohydrates and proteins
 - ii. GLC: Principle and applications to separation and dilution of coloring matter, flavor constituents and aromatic compounds.
 - iii. HPLC: Principle and application to analysis of food color and flavors
4. Electrophoresis; Principle, Factors affecting Electrophoresis mobility, moving boundary Electrophoresis, Support Materials used in Electrophoresis, paper Electrophoresis, Applications to proteins, Amino acids.

UNIT -IV

1. Atomic Absorption spectrometer; Principle, Instrumentation -Hallow cathode lamp, nebulizer, photo multiplier tube, interferences; Quantitative applications to minerals in Food Material such as Calcium and Iron

**CBCS - BSc. FOOD SCIENCE OPTIONAL SUBJECT FOR THE BATCH
ADMITTED in 2020-2021 onwards, DEPT OF CHEMISTRY
SEM - VI DSE-1F(A) INSTRUMENTAL ANALYSIS OF FOODS**

1. Colorimetry.

A. Estimation of Sugars.

Glucose by Anthrone Method.

Fructose by Resorcinal Method.

B. Estimation of Protein.

Biuret Method.

Folin's Lowry Method.

C. Estimation of Amino Acids

Tyrosine.

D. Estimation of Inorganic Elements

Iron

Phosphorous.

Calcium

E. Estimation of Ascorbic Acid

2. Florimetry.

Estimation of Thiamine

Estimation of Riboflavin

3. Flame Photometry

Estimation of Sodium

Estimation of Potassium

4. Chromatography - TLC

Separation & Identification of Carbohydrates

Separation & Identification of Proteins

5. Kjeldhal method for proteins

6. Soxhlet method for fat

7. Celebration of World Consumer Rights Day

Note for internal assessment;

Practical Internal / Group
activity / mini project

: 10 marks

[Signature]

[Signature]

[Signature]

[Signature]

[Signature]

[Signature]

[Signature]

LIST OF PANEL MEMBERS

SEMESTER /PAPER	TITLE	NAME	COLLEGE	PHONE No.
SEM - I, II, III, IV, V, VI PAPER I, II, III, IV, V, VI (including SEC and Generic Elective papers)	Basics of food and Nutrition	Dr. Uma Chitra	Kasturiba Gandhi college	9848592456
	Food Science and chemistry	Mrs. Meena Kumari	St. Anns College Mahdipatnam	9848204128
	Food preservation and Packaging	Dr. K. Lakshmi	Shadan college, Khairtabad	9989993506
	Food Microbiology, safety and quality	Dr. Vasundhara	Madina College, Himayatnagar	9441901330
	Food product Development	Dr. Avanthi Rao	-do-	9866430063
		Mrs. Phani Kumari	-do-	9392415483
	Testing and analysis of Foods	Dr. Sucharitha Devi	College of Home science	9440166830
	Instrumental analysis of foods	Mrs. T. Supraja	Shadan College Khiratabad	9440753325 9885776671
		Mrs. Tabita Ramona		
		Ms. Haritha	-do-	
	Mr. Joseph	Satavahana University Satavahana University	9704455325 6302813073	
SEM - VI PAPER VI	Entrepreneurship and Management	Dr. Krishna Kumar		

A collection of handwritten signatures and initials in green and blue ink, including names like 'Shale', 'M.S.R.', and 'Palle', along with dates like '2/12/21'.

B.Sc. CBCS FOOD SCIENCE
DEPARTMENT OF CHEMISTRY
Practical Model Question Paper
For Semester I, II, III, IV, V and VI

Time :3Hrs.

Max. Marks :50

SEMESTER	External (Marks)	Internal (Marks)	Total (Marks)
I	40	10	50
II	40	10	50
III	40	10	50
IV	40	10	50
V	40	10	50
VI	40	10	50

Note: Project Training – 4 Credits (100 Marks) are allotted considering the following parameters such as:

- Attendance
- Report Writing
- Seminar Presentation

[Handwritten signatures and stamps in blue and green ink]

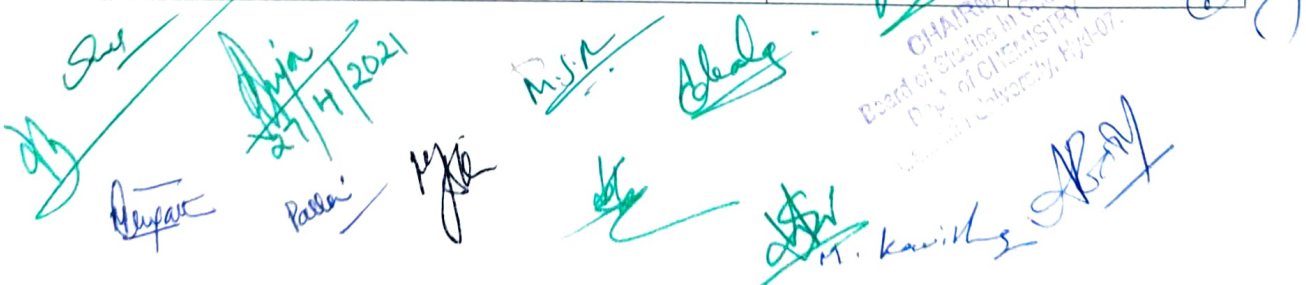
[Stamp: Head, Department of Chemistry, University of Hyderabad-95]

[Stamp: Department of Studies in Chemistry, University of Hyderabad, Hyderabad-503-07]

[Stamp: Dr. M.S. RADHIKA, PhD (Nutrition), Head of the Department, Science E & Head of the Department, Department of Dietetics, ICMR-National Institute of Nutrition, Jamia Osmania (PO), Secunderabad-501 007, India

CBCS - B.Sc. FOOD SCIENCE OPTIONAL SUBJECT - 2021-22 (THEORY) (8 paper)

Semester -I	Semester-II	Semester -III	Semester -IV	Semester-V	Semester -VI
PAPER-I Basics of Food and Nutrition Marks-80+20	PAPER-II Food Science and Chemistry Marks-80+20	PAPER-III Food Preservation and Packaging Marks-80+20	PAPER-IV Food Microbiology, Safety and Quality Marks-80+20	PAPER-501 (GE) Food Product Development Marks-80+20	Project Training Or
1. Introduction to food and Nutrition 2. Energy, Carbo hydrates, Proteins, fats & oils, role of fibre 3. Foods of Plant origin 4. Foods of animal origin	1. Post-Harvest Technology 2. Extrusion Technology 3. Definition and importance of Food Chemistry 4. Protein Chemistry	1. Scope and importance of food processing, principles of food preservation 2. Low temperature, Thermal processing Preservation by sugar and salt, Chemical preservation 3. Definition, Functions of packaging, packaging of different foods 4. Development of suitable packaging for food, Packaging laws, Regulations and food labelling.	1. Introduction to Food Microbiology, Growth curve 2. Food spoilage, Beneficial effects of Micro Organisms 3. Common terms associated with Food safety, Food safety and Hygiene in tropics 4. Assessment of microbiological quality of foods	1. Designing new products from a market perspective 2. Organoleptic evaluation and considerations for sensory evaluation 3. Finding place for new foods in regular markets, advertising and sales promotion, storage; types of transport; insurance 4. Food Processing Industry and consumer research	PAPER-601 Entrepreneurship and Management Marks-80+20 1. Entrepreneurial Science, introduction, business opportunity identification Setting up a business unit 2. Meaning and definition of Management, Organization 3. Basics of financial, cost accounting and marketing management 4. Investment & Financing a project, Govt. schemes for Financial assistance
		Sec I ; Snack Food Technology-2 credits Sec II; Beverage Technology-2 credits	Sec III ; Bakery Technology-2 credits Sec IV; Confectionary Technology-2 credits	PAPER-504 A Testing and Analysis Of Foods; marks-80+20 1. Food Adulteration, Standardization of Foods 2. Physical and chemical properties of foods 3. Determination of moisture content, Carbohydrate Analysis and Fat Analysis 4. Analysis of proteins, Vitamins and minerals, Kinetic Methods in Food Analysis	PAPER-604 A - Instrumental Methods of Food Analysis Marks-80+20 1. Introduction to food Analysis, Sampling 2. Colorimetry & Spectrophotometry, Instrumentation, minerals, Florimetry 3. Chromatography, Electrophoresis 4. Atomic Absorption spectrometer, Flame Emission Spectroscopy, Radiotracer techniques.
		Sec I Unit I - Grain based snacks Unit II - Vegetable and fruit based snacks	Sec III Unit I - Dough characteristics Unit II - Manufacturing process of products	B. Retail Food Vending	B Novel Food Technologies


 Multiple handwritten signatures in blue and green ink are present at the bottom of the page. A blue stamp from the Board of Studies in Chemistry, University of Hyderabad, is also visible.

CBCS - B.Sc. FOOD SCIENCE OPTIONAL SUBJECT - 2020-21 (PRACTICAL)

Semester-I	Semester-II	Semester-III	Semester-IV	Semester-V	Semester-VI
PAPER-I Food Science marks-40+10	PAPER-II Science And Chemistry of Foods Marks- 40+10	PAPER-III Food Preservation and Packaging Marks-40+10	PAPER-IV Food Micro Biology - Marks-40+10	PAPER-V-A Teting and Analysis of Foods Marks- 40+10	PAPER-VI-A Instrumental Methods of Food Analysis Marks- 40+10
1. Food measuring techniques 2. House hold measures for raw and cooked foods 3. Calculation of BMI using height and weight 4. Best method of cooking for rice, dal, egg, etc., 5. Demonstration of the effect of sprouting 6. Analysis of physico chemical properties of cereals and products 7. Analysis of fruits and fruit products	1. Test for gluten 2. Experimentson starches 3. Experiments on sugars 4. Experiments on fruits and vegetables; pigments & pH 5. Experimentson Milk and milk products on properties of egg 6. Visit to FCI / warehouses / agro based food industries	1. Preparation of Jams, Jellies and Marmalades, 2. Squashes, Preserves and candies 3. Sauces and Ketchups 4. Preparation of Instant pickles and fermented pickles 5. Food package material – Scrap Book 6. Shelf life of packed products 7. Visit To Indian Institute Of Packaging / fruit and vegetable processing factories	1. Use of Microscope, 2. Tools of Micro biologist, 3. Study of Bacteria and yeast 4. Determination of Detergent Strength 5. Direct Microscopic count 6. Study of molds in foods 7. Determination of fill of the can, water holding capacity of containers 8. Estimation of Microbiology count based on Metabolism Dye reduction tests 9. Identification of Micro Organisms involved in food spoilage 10. Beneficial Effects of Microorganisms 11. Planning a training programme	1. Analysis of Moisture content of different foods 2. Estimation of Ash for different food samples 3. Analysis of Sugar and Sugar related products, cereals and their products, Fat & oils, Milk & Milk products 4. Analysis of foods for the presence of common Additives 5. Synthetic Sweetening Agent - Saccharin Estimation of Common Additives	1. Colorimetry Estimation of Protein, amino acids, Inorganic Elements, Ascorbic Acid 2. Florimetry, 3. Flame Photometry 4. Chromatography - TLC 5. Kjeldhal method for proteins 6. Soxhelt method for fat
				Paper V-B Retail food vending	
					Paper VI B Novel food technologies

27/11/21
 M.S. Radhika
 Dr. M.S. Radhika, PhD (Nutrition)
 Head of the Department
 Department of Dietetics, ICMR-National Institute of Nutrition
 Jamat-Osmania (PO), Secunderabad-500 082, India

Telangana State Council of Higher Education, Govt. of Telangana
 B.Sc., CBCS Common Core Syllabi for all Universities in Telangana
PROPOSED SCHEME FOR CHOICE BASED CREDIT SYSTEM
 IN B.Sc. FOOD SCIENCE from 2021-22 onwards

FIRST YEAR - SEM - I				
CODE	COURSE TITLE	COURSE TYPE	HPW	credits
BS101	Ability Enhancement Compulsory Course AECC-1	ES	2	2
BS102	English	CC-1A	4	4
BS103	Second Language	CC-2A	4	4
BS104	Optional-I - Food Science-I Laboratory Course-I	DSC-1A	4T + } = 7 3P	4+1=5
BS105	Optional-II	DSC-2A	4T+3P=7	5
BS106	Optional-III	DSC-3B	4T+3P=7	5
TOTAL CREDITS			31	25
FIRST YEAR - SEM - II				
BS201	Ability Enhancement Compulsory Course AECC-1	ES	2	2
BS202	English	CC-1B	4	4
BS203	Second Language	CC-2B	4	4
BS204	Optional-I - Food Science -II Laboratory Course-II	DSC-1B	4T + } = 7 3P	4+1=5
BS205	Optional-II	DSC-2B	4T+3P=7	5
BS206	Optional-III	DSC-3B	4T+3P=7	5
TOTAL CREDITS			31	25
SECOND YEAR - SEM - III				
BS301	Snack food technology Beverage technology	SEC-I SEC-II	2 2	2 2
BS302	English	CC-1C	3	3
BS303	Second Language	CC-2C	3	3
BS304	Optional-I - Food Science -III Laboratory Course-III	DSC-1C	4T + } = 7 3P	4+1=5
BS305	Optional-II	DSC-2C	4T+3P=7	5
BS306	Optional-III	DSC-3C	4T+3P=7	5
TOTAL CREDITS			31	25
SECOND YEAR - SEM - IV				
BS401	Bakery technology Confectionary technology	SEC-III SEC-IV	2 2	2 2
BS402	English	CC-1D	3	3
BS403	Second Language	CC-2D	3	3
BS404	Optional-I-Food Science-IV Laboratory Course-IV	DSC-1D	4T + } = 7 3P	4+1=5

Swf
 27/4/21
 M. Kanika
 Pallu
 M.V.R.

**CBCS B Sc. FOOD SCIENCE OPTIONAL SUBJECT FOR THE BATCH ADMITTED IN
2021-22 onwards**

**SEM-I; PAPER-I;
BASICS OF FOOD AND NUTRITION**

**60 Hrs (4 Hrs / week)
CREDITS 4+1**

AIM

To introduce students to basics of food and nutrition in theory and practicals

Objectives:

1. To educate about the sources of various nutrients (macro and micro) and their functions.
2. To train in meal planning using food exchange guides.
3. To give awareness about various foods and techniques of choosing them.
4. To teach about the composition, nutritive value, processing and types of various commodities.

UNIT - I

1. Introduction to food and Nutrition – General terms and definitions; Food nutrition, nutrients, etc., Inter – relationship between nutrition and health, visible symptoms of good health. Factors affecting food intake.
2. Use of food in the body Digestion, absorption transport and utilization of nutrients, Balanced diet, Recommended dietary allowances; Translating RDA into Daily food intake
3. Basic food groups and how to use a Food Guide, Food Exchange List, diet planning, Factors affecting diet planning.

UNIT - II

1. Energy – unit of energy, food as a source of energy, energy value of various nutrients and foods, effect of physical activity on energy requirement, B.M.R, factors affecting B.M.R., B.M.I
2. Definition, Classification, Sources, Functions and Deficiency;
 - a. Carbohydrates, Dietary Fiber, proteins, lipids,
 - b. vitamins (Fat soluble and water soluble), minerals (micro and macro).
3. Water as a nutrient, functions, sources, requirements, water balance, excess and deficiency, Acid base balance, enzymes.

UNIT - III - Food Commodities

Food of Plant origin : production and availability, types, classification, structure, composition and nutritive value, processing

1. Cereals (Rice, wheat, maize), millets (Ragi, Bajra, jowar, oats, barley & others) pulses
2. Fruits and vegetables; pigments; classification and structures, flavors
3. Fats and oils.

Handwritten signatures and dates:
27/4/21
Asha
K. J. K.
M. S. R.
M. S. R.

UNIT – IV

Foods of animal origin: production and availability.

1. Milk - composition and nutritive value, processing; milk products.
2. Eggs – structure, composition and nutritive value, quality evaluation;
Flesh foods - structure, composition and nutritive value, class and grades, post mortem changes, tenderization practices.
3. Composition, nutritive value, processing and types of Sugars & Sugar products, Spices and condiments, salt, tea, coffee and cocoa

Reference Books;

1. Fundamentals of Foods & Nutrition – Mudambi, S.R. Rajgopal M.V., Ed-2, Wiley Eastern Ltd., 2014.
2. Nutritional Science by Smt. B. Srilakshmi – 2013.
3. Foods Nutrition and Health by Pros. Vijaya Khader – ICAR Publications.
4. Introductory Nutrition – Guthrie, Hele Andrews, 6th Ed, St. Louis Times Mirror/Mosby College, 1988.
5. Advanced Text book of Foods & Nutrition – Swaminathan S. Ed-2, Bappco Ltd., 1998.
6. Principles of Nutrition – Willson, Ed-4, New York, John Wiley & Sons, 1979.
7. Food facts and Principles – Shakuntala Manay, New Age International (P) Ltd, 2013.
8. Food Science – Srilakshmi, New Age International (P) Ltd., 2013.
9. Food Science – Potter, CBS Publishers, 1999.
10. Flavor Chemistry and Technology – H.B. Heath and G. Reineccius.

NOTE FOR PAPER SETTING:

The Question paper will consist of two sections.

Section I: (8*4=32) Consist of 12 questions. Each question carries Equal weightage of marks. The candidate will have to attempt eight questions .

Section II: (4x12=48) Consist of 4 questions (1 from each unit with internal choice). Each question carries weightage of 12 marks. The candidate will have to attempt all questions.

Distribution of Internal Assessment (20 Marks)

20 marks for theory paper in a subject reserved for Internal assessment shall be distributed as under:

- i. Two Class Tests : 15 marks each, (subjective and objective)
- ii. one Written Assignment /group activity/mini project : 5 Marks

[Handwritten signatures and dates in blue and green ink, including '27/4/21', 'M.J.A.', and 'H. Kavitha']

**CBCS B.Sc. FOOD SCIENCE OPTIONAL SUBJECT
FOR THE BATCH ADMITTED IN - 2021-22**

SEM-1 PAPER - I FS 151 (W) FOOD SCIENCE PRACTICAL SYLLABUS

1. Food measuring techniques
2. House hold measures for raw and cooked foods
3. Calculation of BMI using height and weight
4. Best method of cooking Rice
5. Best method of cooking Dals.
6. Best method of cooking Eggs.
7. Evaluation of quality of egg
 - i. Determination of Yolk index.
 - ii. Determination of white index.
8. Demonstration of the effect of sprouting.
9. Analysis of physico chemical properties of cereals and products
 - i. Density.
 - ii. Hydration Capacity and Hydration Index.
 - iii. Swelling capacity.
 - iv. Cooking time.
 - v. Determination of volume of bread by plain graph method.
 - vi. Determination of bread quality by ink print method.
10. Analysis of physico chemical properties of cereals and products
 - i. Density.
 - ii. Hydration Capacity and Hydration Index.
 - iii. Swelling capacity.
 - iv. Cooking time.
 - v. Determination of volume of bread by plain graph method.
 - vi. Determination of bread quality by ink print method.
11. Analysis of fruits and fruit products
 - i. Color
 - ii. Firmness
 - iii. Total pectin as Ca pectate in fruit products
 - iv. Prevention and control of enzymatic browning.
12. Effect of preparation technique on Meat tenderization
13. Determination of smoking points of Fats & Oils.
14. Planning of diets; using food exchange lists.
15. Visit to National institute of Nutrition.

Note for internal assessment;

Practical Internal / Group
activity / mini project

: 10 marks (bulletin board)

Sug

Ami
27/4/21

V

Shale

Shri

Praty

Bengau

Mpa

Palle

M. K. N. S. B. S.

M. S. N.

CBCS B. Sc. FOOD SCIENCE

**OPTIONAL SUBJECT FOR THE BATCH ADMITTED in 2020-2021 onwards,
DEPT OF CHEMISTRY**

SEM – III PAPER – III FS 301 (W) FOOD PRESERVATION AND PACKAGING

60 Hrs (4Hrs/week)

CREDITS - 4+1

AIM:

To educate about various methods of food processing, preservation and packaging.

Objectives:

1. To enumerate various techniques of preserving foods.
2. To teach food preservation using sugar and salt.
3. To educate about various packaging materials, their classification and suitability to Foods.
4. To impart knowledge in legislation of packaging and food labeling.

UNIT – I

1. Scope and importance of food processing (National and International perspectives).
2. Principles, methods and applications of preservation
 - a. Low temperature; Refrigeration, freezing, freeze drying,
 - b. Moisture removal; Concentration, dehydration, drying
 - c. Thermal processing; aseptic processing, canning,
3. Hydrostatic pressure cooking, dielectric heating microwave processing, hurdle technology, Membrane Technology; Irradiation.

UNIT – II

1. Preservation by sugar; principle and mechanism of preserved foods, composition and related quality factors, preparation of fruit and vegetable juices, preparation of syrups, cordials and nectars, juice concentrates, pectin and related compounds, jams, jellies, marmalades, preserves. Theory of gel formation, quality control,
2. Preservation by Salt; pickles,
3. Preservation by Chemical additives.

UNIT – III - FOOD PACKAGING

1. Definition, Functions of packaging. general Criteria for selecting packaging material; Classification of packaging materials,
2. Different types of packaging materials; Metal, Glass, Wood, Papers, Plastic etc., advantages and dis-advantages of each packaging materials;
3. Packaging of different foods. Effect of packaging materials on Nutritive value of food, Food packaging interactions; desirable and undesirable.

UNIT – IV

1. Development of suitable package for food, introducing package in the product life cycle Design development and testing by market appraisal, concept, performance, consumer placement, test market checklist.
2. Packaging laws and regulations – SWMA, Agmark, BIS etc, Packaging specifications and standards

[Handwritten signatures and dates in green and blue ink at the bottom of the page, including "27/11/21", "M.S.K.", "M. Kavitha", "Raj", "Passon", and "Raj"]

3. Food labeling and nutrition labeling; Introduction, need and importance, Packages with special features; Corrugated fiberboard boxes and reusable packages, Shrink package, smart packaging, MAP, Bio packaging, edible packaging films, Environmental performance of packaging, etc.

Reference Books

1. NIIR Board – Modern Technology on Food Preservation; Asia Pacific Business Press Inc. (2005).
2. Food processing & Preservation by Neelam Khetar Paul; Danja Publishing House (2005).
3. Food processing and preservation by Subbulakshmi G and Shobha, A. U, New Age International Pvt. Ltd., (2001).
4. Fundamentals of food process engineering by Romeo T. T - CBS publishers and distributors, ed no 2. (2000).
5. Food Preservation – by Sandeep Sareen, Samp & sons, Ed. No.1, 1999.
6. Preservation of Fruits & Vegetables, Girdhari Lal, Siddappa, G.S. Indian Council of Agricultural Research, New Delhi, 1998.
7. Sensory Evaluation of foods – Lawless H.T., Heymann H, 1998.
8. Hand book on fruits, Vegetables & Food processing with canning & preservation, Niir Board, Asia Pacific Business press.
9. Sensory Evaluation Practices – Stone.
10. Principles of Sensory Evaluation of foods – M.A. Amerine, R.M. Pangborne, E.B. Roessler.
11. Relating Logistics & Fresh Food Packaging (Managing change is supply chain). by Preeti Acharya - Anmol Publications Pvt. Ltd., First edition 2014.
12. A Hand Book of Food Packaging – F.A. Paine and H.Y. Paine.
13. Principles of Food Packaging – Stanley Sacherow and C. Griffin.
14. Food Packaging & Preservation – M. Mathlouthi.
15. Food Packaging (Principles & Practice) - Gordan and L. Raboertson.
16. Principles of Food Packaging – Heiss. R.
17. A Hand Book on Food Packaging - P. Jacob John - Daya Publishing company.
18. Kether Paul N. and Punya N., Food packaging - Daya Publishing Hosue.
19. Langowski G., food processing science and Technology - Oxford book company.

NOTE FOR PAPER SETTING:

The Question paper will consist of two sections.

Section I: (8*4=32) Consist of 12 questions. Each question carries Equal weightage of marks. The candidate will have to attempt 8 questions.

Section II: (4x12=48) Consist of 4 questions (1 from each unit with internal choice). Each question carries weightage of 12 marks. The candidate will have to attempt all questions.

Distribution of Internal Assessment (20 Marks)

20 marks for theory paper in a subject reserved for internal assessment shall be distributed as under:

- | | | |
|------|------------------------------|---|
| (i) | Two Class Tests | 15 marks each, (subjective and objective) |
| | One Written Assignment | |
| (ii) | /group activity/mini project | : 5marks |

[Handwritten signatures and marks in green and blue ink are present at the bottom of the page, including names like 'Sug', 'M.S.N. Sri', 'Shale', 'Rahul', and 'H. Karim' along with dates like '27/12/21' and '21/12/21'. A large green checkmark is also visible.]

**CBCS B.Sc. FOOD SCIENCE OPTIONAL SUBJECT FOR THE BATCH ADMITTED
IN - 2020-2021 onwards, DEPT OF CHEMISTRY
SEM – III PAPER – III FSM 351 (W) Practicals
FOOD PRESERVATION AND PACKAGING**

- I. Preparation of Jam: Apple, Papaya, Guava, Mixed Fruit, Mango, Grape.
Testing its doneness by plate test, sheet test, glass test
- II. Preparation of Jellies & Marmalades:
Papaya, Guava, Goose berry, Orange Marmalade, Sweet lime.
- III. Preparation of Squashes
Pineapple, Grape, Lime & Ginger, Orange, Sweet Lime, Lime, Mango.
- IV. Preparation of preserves and candies
- V. Preparation of Sauces and Ketchups
Tomato Sauce and Ketchup, Tamarind Sauce, Mixed Vegetable Sauce, Red Chilli Sauce, Green Chilli Sauce.
- VI. Preparation of Instant Pickles
Tomato, Ginger, Mango, Cauliflower, Drumstick, Gogu, Mixed Vegetable pickle Lime Pickle
- VII. Preparation of Fermented Pickles
Lime, mango, Tomato, Ginger.
- VIII. **Food package material – Scrap Book.**
- IX. Shelf life of packed products.
 1. Weight gain or loss method.
 2. Half value period method.
 3. Direct weighing method.
- X. Visit to Indian Institute of Packaging / fruit and vegetable processing factories

Note ; The work is assessed for 10 marks practical internals .

Note for internal assessment;

Practical Internal / Group
activity / mini project

: 10 marks (food packaging scrapbook)

[Handwritten signatures and dates in green and blue ink]

*[Stamp: डॉ. एम. एस. राधिका, पीएचडी (पोषण)
Dr. M. S. RADHIKA, PhD (Nutrition)
अभियांत्रिकी (अभियांत्रिकी) विभाग
Science & Technology of the Department
आहारविज्ञानविभाग, आईसीएमएन राष्ट्रीय पोषण संस्थान
Department of Dietetics, ICMR-National Institute of Nutrition
अभियांत्रिकी (पोषण), बिकरानगर 500 004, आंध्र प्रदेश
Jamal Osmania (PO), Secunderabad-500107, INDIA*

B.Sc. Food science II Year Semester-III
Skill Enhancement Course- I (SEC-I) (2 Credits)
SNACK FOOD TECHNOLOGY

UNIT-I: Technology for grain-based snacks:

15 hrs (1 hr/week)

whole grains – roasted, toasted, puffed, popped and flakes, coated grains-salted, spiced and sweetened, chocolate processing, papads and instant premixes of traditional Indian snack foods.

UNIT-II: Technology for fruit and vegetable based snacks:

15 hrs (1 hr/week)

Chips, wafers; Extruded snack foods: Formulation and processing technology, colouring, flavouring and packaging.

Recommended books

1. Edmund WL. Snack Foods Processing. AVI Publ.
2. Frame ND .1994.The Technology of Extrusion Cooking. Blackie Academic.
3. Gordon BR.1997 Snack Food.AVI Publ
- 4.. Samuel AM.1976. Snack Food Technology. AVI Publ.

Course objective (CO);

To develop the skills for processing of different types of snack foodswith a brief knowledge of packaging

Signature
27/4/21

Palle

Signature

Signature

Signature

Signature

H. Kanitha

Signature

Signature

M.S.R.

Signature

Signature

Signature

B.Sc. Food Science II Year Semester-III
Skill Enhancement Course- II (SEC-II) 2 credits
BEVERAGE TECHNOLOGY

UNIT-I

15 hrs (1 hr /week)

Types of beverages and their importance; Manufacturing technology for juice-based beverages; synthetic beverages; spices, dairy and imitation dairy-based beverages. Technology of carbonated beverages, carbonation of soft drinks. low-calorie and dry beverages ; role of various ingredients of soft drinks, isotonic and sports drinks. Cultivation and processing of Tea, Coffee and cocoa.

UNIT-II

Alcoholic beverages- types, manufacture and quality evaluation; the role of yeast in beer and other alcoholic beverages, ale type beer, lager type beer, technology of brewing process, wine and related beverages. Processing of distilled spirits- (whisky, rum, brandy, vodka, gin, sake, champagne). Packaged drinking water- definition, types, manufacturing processes, quality evaluation and raw and processed water, methods of water treatment, BIS quality standards of bottled water; flavored water, carbonated water.

Recommended books;

1. Hui YH. et al 2004. Handbook of Food and Beverage Fermentation Technology. Marcel Dekker.
2. Woodroof JG & Phillips GF.1974. Beverages: Carbonated and Non-Carbonated. AVI Publ.

Course Objective (co):

To develop the skills for processing of different types of alcoholic and non-alcoholic type of beverages with a brief knowledge of packaged drinking water manufacturing

Handwritten signatures and dates in blue and green ink:

- 27/4/24
- Swal
- Rangaraj
- M. S. N.
- H. K...
- Dr. M. S. RADHIKA, PhD (Nutrition)
- Science E & Head of the Department
- आहारविज्ञानविभाग, आईसीएमआर-राष्ट्रीयपोषणसंस्थान
- Department of Dietetics, ICMR-National Institute of Nutrition
- जमिनी-उस्मानिया (पोस्ट), फिक्करबाग 500 008, हैदराबाद
- Jamia-Usmania (PO), Secunderabad 500 007, INDIA

**CBCS B. Sc. FOOD SCIENCE OPTIONAL SUBJECT FOR THE BATCH ADMITTED IN
2020-2021 onwards, DEPT OF CHEMISTRY
SEM - V FOOD PRODUCT DEVELOPMENT (Generic Elective)**

60 Hrs (4 Hrs / week)

AIM:

To educate students about the product development and marketing.

CREDITS - 4 + 1

Objectives

1. To create awareness about status of food processing institutes
2. To educate about product development, scaling up and marketing
3. To educate about current scenario and future for food industry

UNIT I

1. Designing new products from a market perspective, Definition, Importance, Need of product development, Steps of product development, Product development tools, Reasons for failure,
2. R & D process, Engineering & Manufacturing, Safety & regulatory aspects of a product, Strategies for global product development.
3. Working out the cost of product.

UNIT II

1. Organoleptic evaluation of products; need and importance, objectives, quality attributes to be considered; color, flavour, texture and taste,
2. Considerations for Sensory evaluation; layout of sensory evaluation laboratory, selection of training and sensory panel.
3. Organoleptic evaluation ; sensitivity tests, threshold value, paired comparison test, duo-trio test, triangle test, hedonic scale, chemical dimension of basic tastes, Amoore's classification of odorous compounds. Sherman and Szczniak classification of food texture

UNIT - III

1. Finding place for new foods in regular markets, marketing plan for the entrepreneur, advertising and sales promotion.
2. Physical Distribution and Factors affecting it, Transportation; types of transport, Storage and Insurance; need, types and importance.
3. Case studies of successful and unsuccessful entrepreneurs

UNIT -IV

1. Food processing industry ; opportunities in food processing sector, national policy on food processing, facilities with the policy, outcomes
2. Consumer research; consumer behavior, perception, philosophies, specific needs, communications.

University Industry synergy; convergence of academia, industry and consumer, Intellectual property rights

Handwritten signatures and dates at the bottom of the page, including "27/4/21" and "M. J. N.".

References;

1. Food Science & food Biotechnology, - by Sheetal Singh Centrum Press, New Delhi First Edition 2014.
2. Comprehensive cost control and System Management in Food & Beverage Industry by Preeti Acharya - Anmol Publications Pvt. Ltd., First edition 2014
3. Nutrition and Health promotion – Bhavana Sabarwal.
4. Food product development – From concept to the market place – Ernst Graf.
5. Food processing and preservation – Neelam Khetarpaul
6. Applied science of Food studies – V.K. Kaushik.
7. Food composition and preservation – Bhavana Sabarwal.

NOTE FOR PAPER SETTING:

The Question paper will consist of two sections.

Section I: (8*4=32) Consist of 12 questions. Each question carries Equal weightage of marks. The candidate will have to attempt eight questions.

Section II: (4x12=48) Consist of 4 questions (1 from each unit with internal choice). Each question carries weightage of 12 marks. The candidate will have to attempt all questions.

Distribution of Internal Assessment (20 Marks)

20 marks for theory paper in a subject reserved for internal assessment shall be distributed as under:

Two Class Tests : 15 marks each, (subjective and objective)

One Written Assignment /group activity/mini project : 5marks

M.S.R.
डॉ. एम.एस. राधिका, पीएचडी (पोषण)
Dr. M. S. RADHIKA, PhD (Nutrition)
वैज्ञानिक (उप निदेशक) व विभागाध्यक्ष
Science E & Head of the Department
आहारविज्ञानविभाग, आईसीएमआर राष्ट्रीय पोषण संस्थान
Department of Dietetics, ICMR-National Institute of Nutrition
जमाल-उस्मानिया (गोंदल), सिकंदराबाद-500 008, भारत
Jamali-Osmania (PO), Secunderabad-500 008, INDIA

Handwritten signatures and dates in various colors (green, blue, black) are present at the bottom of the page, including a date 27/11/24.

CBCS B.Sc. FOOD SCIENCE OPTIONAL SUBJECT FOR THE BATCH ADMITTED IN 2020-2021 (Discipline Centric Elective) DEPARTMENT OF CHEMISTRY
SEM – V (DSE-IF-A) TESTING AND ANALYSIS OF FOODS
60 Hrs (4 Hrs / week)

AIM:

CREDITS - 4 + 1

To educate students about the analysis of various foods and their standardization.

Objectives:

1. To teach about sampling and preparation of samples in food analysis.
2. To teach about physical and chemical methods, used for analysis of foods, such as, cereals, milk and milk products, fats and oils, food additives.

UNIT – I

1. Food adulteration – Introduction of Food adulteration, definition. adulterants in foods,
2. Consumer education, consumers problems, rights and responsibilities, copra 1986, tips for wise purchasing, redressal measures how to give complaints and proforma of complaints, Consumer protection; role of voluntary agencies
3. Standardization of Foods; Definition, Standards of Quality for cereals, starchy foods, spices and condiments, sweetening agents, meat and meat products, vinegar, sugar and confectionary, beverages-alcoholic and non alcoholic, carbonated water etc., Milk and milk products, oils and fats, Canned foods, fruits and vegetables products, fssai.

UNIT – II

1. Physical and chemical properties of foods
2. Physical Methods of Food Analysis; principle and application of;
 - a) Refractometry;
 - b) Polarimetry
 - c) specific Gravity; Lactrometric determination
 - d) Viscosity.
 - e) Freezing point determination, Surface tension.
 - f) Electro analytical determination; polarography
4. Food rheology; parameters, models, methods and instruments

UNIT III

1. Determination of moisture content; principles and methods
determination of total solids in food, Ash analysis: Importance of ash analysis, acid soluble ash and acid insoluble ash
2. Carbohydrate Analysis; Importance of analysis, principles and methods of analysis of monosaccharides, oligosaccharides and Polysacchrides. Dietary fibre (brief outline)
3. Fat Analysis; Importance; Principle and methods of analysis, Fat characterization.

Handwritten signatures and dates at the bottom of the page, including names like 'Sud', 'Anita', 'M. Kavitha', 'Pallavi', 'Abhishek', 'Raj', and 'Sudhakar', along with dates like '29/4/21'.

UNIT -IV

1. Protein Analysis; Importance, principle and methods of analysis, protein separation and characterization.
2. Analysis of Vitamins and minerals; Importance, Methods of Analysis.
3. Kinetic Methods in Food Analysis; Enzyme Kinetics, First order rate, Measurement of Enzymatic Activity. Applications of Enzymatic Analysis.

Reference Books:

1. Techniques of Food Analysis – Winton & Winton Allied Scientific Publishers, 1999.
2. Food Analysis – Pomeranz, CBS Publication.
3. The Chemical Analysis of Food & Food products – Morris and Jacob, CBS Publishers.
4. Chemical Analysis of Foods – Susane Nielson, 2003.

NOTE FOR PAPER SETTING:

The Question paper will consist of two sections.

Section I: (8*4=32) Consist of 12 questions. Each question carries Equal weightage of marks. The candidate will have to attempt eight questions.

Section II: (4x12=48) Consist of 4 questions (1 from each unit with internal choice). Each question carries weightage of 12 marks. The candidate will have to attempt all questions.

Distribution of Internal Assessment (20 Marks)

20 marks for theory paper in a subject reserved for internal assessment shall be distributed as under:

- i. Two Class Tests : 15 marks each, (subjective and objective)
- ii. One Written Assignment /group activity/mini project : 5marks

[Handwritten signatures and dates in blue and green ink]

27/4/21

Shale

Abhi

Pranav

Pranav

H. Kanishk

M.S.M

CBCS - B.Sc. FOOD SCIENCE OPTIONAL SUBJECT FOR THE BATCH ADMITTED in
2020-2021 onwards, DEPARTMENT OF CHEMISTRY
SEM - V DSE(1F)-A TESTING AND ANALYSIS OF FOODS

1. Testing of common adulterants in foods
 - i. Milk and products:
 - ii. Oils and fats:
 - iii. Spices and condiments.
 - iv. Cereal and cereal products:
 - v. Pulses
 - vi. Sugars & Preserves.
 - vii. Beverages.
 - viii. Miscellaneous products:
2. Analysis of Moisture content of different foods.
 - i. Hot air oven methods.
 - ii. Infra red Moisture balance.
3. Estimation of Ash for different food samples.
 - i. Total Ash, Water Soluble, Water insoluble.
 - ii. Acid soluble Ash, Acid insoluble Ash.
4. Analysis of Sugar and Sugar related products
 - i. Estimation of Sugar in milk by Iodometry
 - ii. Estimation of Reducing Sugar in Honey by Berlin Institute Method.
 - iii. Fructose – Glucose ratio.
5. Analysis of cereals and their products.
 - i. Alcoholic Acidity
 - ii. Crude Glutene
 - iii. Diastase Activity
 - iv. pH Value
 - v. Bleach value
6. Analysis of Fat & Oils
 - i. Acid Value
 - ii. Iodine value
 - iii. Peroxide Value
 - iv. Saponification value
 - v. Melting point
 - vi. TBA test
7. Analysis of Milk & Milk products
 - i. Titrable Acidity of Milk, Butter, Cream
 - ii. Aldehyde figure in Milk
 - iii. Total solids in Milk

Shale
H. Kasid
M.J.K

Shale
Dr. M.S. RAUHIKA
Department of Dietetics, ICMR-National Institute of Nutrition
Jama Osmania (PO), Secunderabad 500 007, INDIA

Shale
27/4/21
Shale
Shale
Shale

- iv. Specific gravity
- v. Proteins by Titrimetry
- 8. Analysis of foods for the presence of common Additives.
 - i. Confirmation tests for Vegetable colors in foods.
 - a) Caramel
 - b) Cochineal
 - c) Turmeric
 - d) Annatto
 - e) Chlorophyll
 - f) Beet Dye
 - g) Lycopene
 - h) Beta carotene
 - i) Anthocyanin
 - j) Tannins
 - k) Phenols
 - l) TBHQ
 - m) Non enzymatic browning

ii. High Intensity Sweeteners - Saccharin

iii. Estimation of Common Additives.

- a) Sodium Benzoate
- b) Sodium bi-carbonate.
- c) Sulphur Dioxide by modified ripper titration method
- d) NaCl in food products.

9. Activities of consumer club

Food adulteration awareness campaign – testing of foods

Note for internal assessment;

Practical Internal / Group

activity / mini project

: 10 marks

Handwritten signatures and dates:
27/4/21
M. J. N.
M. Koushik
Ravi
M. J. N.
M. Koushik

डॉ.एम.एस. राधिका (क) (पोषण)
Dr. M.S. RADHIKA (Ph.D. Nutritionist)
विज्ञानिक (उच्च शिक्षण) वृत्त, कोलार
Science E & Head of the Department
आहारविज्ञानविभाग, आईसीएनआर - राष्ट्रीय पोषण संस्थान
Department of Dietetics, ICMR-National Institute of Nutrition
आर.एस.जी. रोड, विजयवाड़ा-५१२ ००२
Jandri-Osmania (PO), Secunderabad-500 082

**CBCS B.Sc. FOOD SCIENCE OPTIONAL SUBJECT
FOR THE BATCH ADMITTED IN 2020-2021
SEM- V DSE-1E(B) RETAIL FOOD VENDING**

60 Hrs (4 Hrs/week)

AIM

Credits 4+ 1

To Teach the Techniques of Retail Food Vending

Objectives:

1. Identify the different areas and segments of the food service industry
2. Explore foodservice associations and organizations

UNIT I.

The evolution of retail in India; Drivers of retail change in India; Changing income profiles, Changes in consumption patterns; food services; Challenges and threats to retail development in India; Bargaining power of suppliers and buyers; Types and Styles of Foodservice Operations, Commercial places of business, Transportation and receiving, Certification of workers, Grocery stores, convenience stores, restaurants, clubs, hotels, HACCP, Street Vending.

UNIT – II; -

Current Food Trends; Coffee clubs, Tea corners, Soda planets, Tiffin centres, Chat foods, desert delights, milk parlours, seasonal sizzlings and New food trends. Types of beverages and their importance; status of beverage industry in India;

Manufacturing technology for juice-based beverages; synthetic beverages; technology of still, carbonated, low-calorie and dry beverages; isotonic and sports drinks; role of various ingredients of soft drinks, carbonation of soft drinks,

Soups—classification Stocks, preparation, types, use Preparation of ideal soup,

Specialty beverages based on tea, coffee, Tea/ coffee - Types, use, preparation, manufacture (explain only flow chart), types, Preparation of ideal soup Tea/ coffee---preparation if ideal tea, coffee, Iced Tea, lemon Tea, Masala tea, Green Tea, Irish Coffee, Mocha, Cappuccino, Espresso cocoa.

UNIT III: - DAIRY TECHNOLOGY:

Present status of milk & milk products in India and world; Composition of milk, procurement, transportation and processing of milk, Special milks such as flavored, sterilized, recombined & reconstituted toned & double toned. Condensed milk- methods of manufacture; dried milk, methods of manufacture of skim & whole milk powder. Cream- classification, composition, evaluation, defects in cream; Butter- composition, classification, methods of manufacture, theories of churning, evaluation, defects in butter.

UNIT IV

Indigenous milk products - Present status, method of manufacture of yoghurt, dahi, khoa, burfi, kalakand, gulabjamun, rosogolla, srikhand, chhana, paneer, ghee, lassi etc; Ice cream- Definition, composition and standards, nutritive value, classification, methods of manufacture, evaluation, defects in ice cream, and technology aspects of softy Cheese: composition, classification, methods of manufacture, cheddar, cottage and processed cheese, evaluation, defects in cheese

Handwritten signatures and dates in various colors (blue, green, black) at the bottom of the page.

References:

1. Banerjee B. 2002. Tea Production and Processing. Oxford Univ. Press. Minifie BW.
2. Chocolate, Cocoa and Confectionery Technology. 3rd Ed. Aspen Publ. NIIR. 2004.
3. Handbook on Spices. National Institute of Industrial Research Board, Asia Pacific Business Press Inc.
4. Coffee Processing Technology. Sivetz M & Foote HE. 1963. AVI Publ.
5. Technology of Indian Milk Products. Aneja RP, Mathur BN, Chandan RC & Banerjee AK. 2002 Dairy India Publ.
6. Outlines of Dairy Technology. De S. 1980. Oxford Univ. Press.
7. Fluid Milk Industry. Henderson JL. 1971. AVI Publ.
8. Fundamentals of Dairy Technology - Theory & Practices. Rathore NS et al. 2008 Himanshu Publ
9. Milk and Dairy Products. Spreer E. 1993
10. Dairy Technology. Marcel Dekker. Walstra P. 1999
11. Dairy Science and Technology. Marcel Dekker. Walstra P. (Ed.). 2006 2nd Ed. Taylor & Francis.
12. Fundamental of Dairy Chemistry. Web BH, Johnson AH & Lford JA. 1987. 3rd Ed. AVI Publ.
13. Handbook of Brewing. Hardwick WA. 1995
14. Handbook of Food and Beverage Fermentation Technology. Marcel Dekker. Hui YH. et al 2004
15. Handbook of Brewing. Marcel Dekker. Priest FG & Stewart GG. 2006 2nd Ed. CRC.
16. Commercial Wine Making - Processing and Controls. Richard P Vine. 1981. AVI Publ.
17. Beverages: Technology, Chemistry and Microbiology Varnam AH & Sutherland JP. 1994.
18. Beverages: Carbonated and Non-Carbonated. Chapman & Hall. Woodroof JG & Phillips GF. 1974 AVI Publ.

Aut
27/4/24

Deepak

ppr

ppr

ppr

ppr

ppr

ppr

H. Kanilga

ppr

M.S.K.

ppr

डॉ. एम. एस. राधिका, (PhD) (Nutrition)
Dr. M.S. RADHIKA, (PhD) (Nutrition)
विज्ञानिक-३ (अ) विदेशीकरण विभाग/विभाग
Science E & Head of the Department
आहारविज्ञानविभाग, आर्यसोमनाथर २ स्थरीयपोषणसंस्थान
Department of Diabetics, ICMR-National Institute of Nutrition
जामे-उस्मानिया (पोस्ट), सिकंदराबाद-५०००३०, आंध्र प्रदेश
Jamal-Usmania (PO), Secunderabad-500030, A.P.

LIST OF PANEL MEMBERS

SEMESTER /PAPER	TITLE	NAME	COLLEGE	PHONE No.
SEM - I, II, III, IV, V, VI	Basics of food and Nutrition	Dr. Uma Chitra	Kasturiba Gandhi college	9848592456
	Food Science and chemistry	Mrs. Meena Kumari	St. Anns College Mahdipatnam	9848204128
PAPER I, II, III, IV, V, VI (including SEC and Generic Elective papers)	Food preservation and Packaging	Dr. K. Lakshmi	Shadan college, Khairtabad	9989993506
	Food Microbiology, safety and quality	Dr. Vasundhara	Madina College, Himayatnagar	9441901330
	Food product Development	Dr. Avanthi Rao	-do-	9866430063
		Mrs. Phani Kumari	-do-	9392415483
	Testing and analysis of Foods	Dr. Sucharitha Devi	College of Home science	9440166830
	Instrumental analysis of foods	Mrs. T. Supraja	Shadan College Khiratabad	9440753325 9885776671
		Mrs. Tabita Ramona Ms. Haritha Mr. Joseph	-do- Satavahana University Satavahana University	9704455325 6302813073
SEM - VI PAPER VI	Entrepreneurship and Management	Dr. Krishna Kumar		

M.S.R.

डॉ. एम.एस. राधिका, (पीएचडी) (पोषण)
Dr. M.S. RADHIKA, PhD (Nutrition)
 Head of the Department of Dietetics & Food Science
 Science & Head of the Department
 आहारविज्ञान विभाग, आर्यसोपानार-राष्ट्रीय पोषण संस्थान
 Department of Dietetics, ICMR-National Institute of Nutrition
 आर्यसोपान (पीएचडी), हैदराबाद 500 030, आंध्र प्रदेश
 (Dr. Uma Chitra (P.O.) Secunderabad-500 030, N.T.S.A.

B.Sc. CBCS FOOD SCIENCE
DEPARTMENT OF CHEMISTRY
Theory Model Question Paper
For All the Semesters - I, II, III, IV, V and VI

Time :3Hrs.

Max. Marks: 80

Note: Answer eight questions from Part-A and all questions from Part-B.
Each question carries 4 marks in Part-A and 12 marks in Part-B.

Part-A

(8 x 4 = 32

Marks) (Short Answer Type)

I. Write any **Eight** questions of the following

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.
- 11.
- 12.

Part-B

(4 x 12 = 48 Marks) (Essay Answer Type)

II. Answer all Questions

- 1 a) or 1b)
2 a) or 2b)
3 a) or 3b)
4 a) or 4b)

Ans
Ans
27/4/24

Ans

M. kavin

Passa

Ans

M.S.R.
डॉ. एम.एस. राधिका, पीएचडी (पोषण)
Dr. M.S. RADHIKA, PhD (Nutrition)
वैद्यार्थिक-ई (उप-निदेशक) व विभागाध्यक्ष
Science-E & Head of the Department
आहारविज्ञानविभाग, आईसीनआर-राष्ट्रीयपोषणसंस्थान
Department of Dietetics, ICMR-National Institute of Nutrition
आम-उस्मानिया (पोस्ट), सिकंदराबाद-500 009, भारत
Jamai-Osmania (PO), Secunderabad-500 007, INDIA

B.Sc. CBCS FOOD SCIENCE
DEPARTMENT OF CHEMISTRY
Practical Model Question Paper
For Semester I, II, III, IV, V and VI


Time :3Hrs.

Max. Marks :50

SEMESTER	External (Marks)	Internal (Marks)	Total (Marks)
I	40	10	50
II	40	10	50
III	40	10	50
IV	40	10	50
V	40	10	50
VI	40	10	50

Note: Project Training – 4 Credits (100 Marks) are allotted considering the following parameters such as:

- Attendance
- Report Writing
- Seminar Presentation


Hiran
Department of Chemistry
University College for Women
Koti, Hyderabad-05.











CHAIRMAN
Board of Studies in Chemistry
Dept. of CHEMISTRY
Osmania University, Hyd-07.


H. Kavitha


Dr. M. S. RADHIKA, (M.Sc., Ph.D.)
Assistant Prof. & Head of the Department
Science E & Head of the Discipline
जाहारविज्ञानविभाग, आइसीएनआर-राष्ट्रीयपोषणसंस्थान
Department of Dietetics, ICMR-National Institute of Nutrition
जाने-उस्ताबाया (पोस्ट), सिकंदराबाद-500 004, आंध्र
Jamaal Osmania (PO), Secunderabad-500 007, INDIA